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UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

MARK ROWELL, Plaintiff, vs. AVIZA TECHNOLOGY HEALTH AND WELFARE PLAN and HARTFORD LIFE AND ACCIDENT INSURANCE COMPANY, Defendants.	Case No.: C 10-5656 PSG **DECLARATION OF CHRISTOPHER R. SNELL IN SUPPORT OF PLAINTIFF'S MOTION FOR JUDGMENT UNDER F.R.CIV.P. 52.** Hearing Date: March 7, 2012 Hearing Time: 10:00 AM Hearing Place: San Jose Hon. Paul S. Grewal, Magistrate Judge

1. I, Christopher R. Snell, have personal knowledge of the following facts.

2. I am a Professor of Sports Sciences and co-founder of the Pacific Fatigue Laboratory ("PFL") at the University of the Pacific. The attached document marked as Exhibit A is a true and exact copy of my C.V.

3. I am unable to attend the March 7, 2012 hearing in this matter, as I will be out of the State of California that day.

Plaintiff's Exhibit 2

4. The attached exhibit marked as Exhibit B is a true and exact copy of a twelve page report dated February 15, 2012 regarding Mark Rowell that I authored in conjunction with Staci R. Stevens, the Executive Director of PFL. Page 12 of the report lists the articles that Ms. Stevens and I have published that relate to the type of testing that Mr. Rowell underwent at PFL.

5. Mr. Rowell underwent two days of cardiopulmonary exercise testing ("CPET") at PFL on January 30-31, 2012. CPET is a standard test used in a variety of situations to determine a patient's functional capacity. For instance, CPET is used to measure athletes' abilities to exercise. It is also used to assess the degree of impairment in patients suffering from ailments, such as heart and lung disease. CPET is generally accepted in the scientific and medical community as a valid means of measuring a person's ability to exert himself. Normal individuals and even individuals with heart disease, lung disease, and HIV infections are able to reproduce about the same level exertion on day two of the testing as they were on day one. However, patients suffering from chronic fatigue syndrome are often unable to reproduce the same level of exertion on day two.

6. During CPET the test subject exercises on a stationary bike while breathing into a machine that analyzes the gases expired. Other measures are taken including heart rate and blood pressure. From the data gathered one can calculate a number of important indicators of the subject's ability to exert himself. Respiratory exchange ratio ("RER"), the ratio of carbon dioxide to oxygen consumed by the subject is measured. The subject's volume of oxygen ("VO"), his or her total oxygen consumption, is measured. His or her ventilation or breaths per minute is measured. The workload achieved through pedaling the bike is measured. From these and other measurements, we are able to determine the amount of workload a patient can achieve before he crosses from aerobic exercise (energy production utilizing oxygen) to anaerobic exercise (energy production derived from sources that do not require oxygen for metabolism). This ventilatory/anaerobic threshold ("V/AT") is important because anaerobic energy production can only be sustained for short periods of time and produces a fatigue effect afterward. Somebody who frequently crosses the V/AT will frequently feel fatigued. The point of doing the testing on two consecutive days is to determine whether the subject is able to recover from the

exertion performed on the first day. If his or her functional capacity drops significantly on the second day, it indicates that the patient cannot sustain effort from day to day and likely feels chronically fatigued. This conclusion is generally accepted in the scientific and medical community.

7. The measurements taken via CPET cannot be faked by the subject. If the subject were to give less than maximum effort, the data relating to metabolism, ventilation, and heart rate would clearly show it.

8. Mr. Rowell gave excellent effort on the testing at PFL, and the data derived are valid.

9. Mr. Rowell's test results indicate that he is chronically fatigued and that he is unable to sustain work activity over time. Healthy individuals and those with cardiac, pulmonary and metabolic diseases show no more than an 8% drop in workload capacity on day two of CPET testing. Mr. Rowell's workload capacity dropped 30% on day two consistent with marked impairment in recovering from exertion.

10. Mr. Rowell's oxygen consumption at the V/AT is markedly depressed. On both days of testing his oxygen consumption was 30-33% of normal consistent with moderate-severe functional impairment.

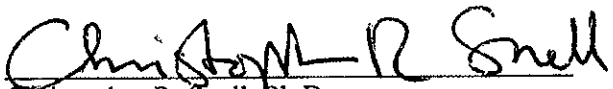
11. Mr. Rowell's pulmonary function at peak exercise dropped the second day by 19%. This finding is consistent with a lack of ventilatory drive resulting from muscle fatigue or a breakdown in central respiratory control. This condition may produce an acidotic state contributing to prolonged recovery and muscle soreness.

12. Mr. Rowell kept a log of his symptoms after the CPET testing, and even after seven days he had not fully recovered from the test. While this is a subjective measure of response to exertion, it is consistent with the data obtained during CPET.

13. I have concluded that Mr. Rowell is not capable of performing even sedentary work based on the CPET test results. Extensive research has been done to determine the amount of energy it takes to do most routine daily activities. We compared Mr. Rowell's exercise capacity to the amount of energy required to do activities of daily living. Mr. Rowell crosses over into

anaerobic energy production when performing tasks such as walking at a normal pace, brushing his teeth, taking a shower, climbing a flight of stairs, walking to or from work or home to car or bus or walking on the job in an office. Given that he frequently crosses the V/AT, he is very likely to feel chronically fatigued. In addition, his recovery time is extended once he has crossed the V/AT. Therefore, I have concluded that he cannot sustain a level of function consistent with completing activities of daily living, let alone working, even in a sedentary capacity.

14. I declare that the above is true, under penalty of perjury under the laws of the United States. Signed in this 29th day of February 2012 in Stockton, California.



Christopher R. Snell, Ph.D.
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EXHIBIT A

VITAE

Christopher Ronald Snell
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Stockton, CA 95219
(209) 956-6151

Department of Sport Sciences
University of the Pacific
Stockton, CA 95211
(209) 946-2703

Education

Trent Polytechnic, Nottingham, England, MET, Mechanical Engineering,1973.
Bedford College, Bedford, England, B.A. (Honours) Sport Studies. Bachelor's Thesis: "The expressed fears of young children in a competitive situation", completed in May 1987.
University of Oregon, Eugene, M.S. Sport Psychology. Master's Thesis: "Children's cognitions and moral judgment about the use of steroids in sport", completed in June 1990.
University of Oregon, Eugene, Ph.D. Exercise and Movement Science. Doctoral Dissertation: "The role of physical experience in education", completed in March 1993.

Professional Experience

Professor, Department of Sport Sciences, University of the Pacific, 2005 to date
Associate Professor, Department of Sport Sciences, University of the Pacific, 2000 to 2005
Associate Professor, Department of Sport Sciences, Department of Curriculum and Instruction (joint appointment), University of the Pacific, 1995 to 2000
Assistant Professor, Department of Sport Sciences, Department of Curriculum and Instruction (joint appointment), University of the Pacific, 1990 to 1995.

Professional Responsibilities

Administrative
- Chair, Department of Sport Sciences, 2005 to 2011
- Health Science Concentration Coordinator.
- Coordinator Mentor Seminar I, 1998

Teaching
- Sport and Exercise Psychology
- Health Psychology
- Motor Learning and Performance
- Heart, Exercise and Nutrition
- Science of Nutrition
- Health Education for Teachers
- Health, Disease and Pharmacology

Publications

Snell, C.R. (2012 in press) Chronic Fatigue Syndrome. *McGraw-Hill Encyclopedia of Science & Technology*, 11th edition. New York: McGraw-Hill
Davenport TE, Stevens SR, Baroni K, Mark Van Ness J, Snell CR (2011). Reliability and validity of Short Form 36 Version 2 to measure health perceptions in a sub-group of individuals with fatigue. *Disability and Rehabilitation*; Epub ahead of print June 20.
Snell CR, Stevens SR, Davenport TE, Van Ness JM (2011). Using cardiopulmonary exercise testing to evaluate fatigue and post-exertional malaise in ME/CFS. *Journal of IiME*; 5(1): 10-12.
Davenport, T.E., S.R. Stevens, K. Baroni, J.M. VanNess, C.R. Snell. (2011) Diagnostic Accuracy of Symptoms Characterising Chronic Fatigue Syndrome. *Disability and Rehabilitation*, 33(19-

20):1768-75. Epub ahead of print Jan 6 2011.
VanNess, J.M., Snell, C.R., Bateman, L., Stiles, T., and Stevens, S.R. (2010) Post-Exertional Malaise in Women with Chronic Fatigue Syndrome. *J. of Women's Health*. 19(2); 239-244
Davenport, T.E., Stevens, S.R., VanNess, J.M., Snell, C.R. and Little, T. (2010) A Conceptual Model for Evidence-Based Physical Therapist Management of Chronic Fatigue Syndrome/Myalgic Encephalomyelitis. *Physical Therapy*, 90(4): 602-614.
VanNess, J.M., Snell, C.R., and Stevens, S.R. (2007) Diminished Cardiopulmonary Capacity During Post-Exertional Malaise in Chronic Fatigue Syndrome. *Journal of Chronic Fatigue Syndrome* 14(2): 77-85.
Ciccolella, M.E., Snell, C.R. Stevens, S.R. and J.M. VanNess, J.M. Legal and Scientific Considerations of the Exercise Stress Test in Chronic Fatigue Syndrome. (2007) *Journal of Chronic Fatigue Syndrome* 14(2):61-75.
Enlander, D., and Snell, C.R. (2007). Chronic fatigue immune dysfunction syndrome. *McGraw-Hill Encyclopedia of Science & Technology*, 10th edition. New York: McGraw-Hill
Snell, C.R., J.M. VanNess, D.R. Strayer, and S.R. Stevens. Exercise and Immune Function in Male and Female Chronic Fatigue Syndrome Patients. (2005). *International Journal of In Vivo Research*, 19:387-390.
Snell, C.R., J. M. VanNess, S.R. Stevens. (2004). When Working Out Doesn't Work Out. *CFIDS Chronicle*; 1(3): 6-9.
Gerrity, T., Papanicolaou, D.A., Amsterdam, J.D., Bingham, S., Grossman, A., Hedrick, T., Heberman, R.B., Krueger, G., Levine, S., Mohagheghepour, N., Moore, R.C., Oleske, J., and Snell, C.R. (2004). Immunologic aspects of chronic fatigue syndrome. Report on a research symposium convened by the CFIDS Association of America and Co-Sponsored by the US Centers for Disease Control and Prevention and the National Institutes of Health. *Neuroimmunomodulation*; 11(6).
VanNess, J.M., Snell, C.R., Dempsey, W.L., Strayer, D.R., and Stevens, S.R. (2003). Subclassifying chronic fatigue syndrome using exercise testing. *Medicine and Science in Sports and Exercise*, 35(6): 908-913.
Snell, C.R., VanNess, J.M., Stevens, S.R., Phippen, S., and Dempsey, W.L. (2003). Exercise therapy and CFS. In L. A. Jason, P. Fennel, and R Taylor, (Eds.). *Handbook of chronic fatigue syndrome and fatiguing illnesses*. 561-579. New York: Wiley
Snell, C.R., VanNess, J.M., Strayer, D.R., and Stevens, S.R. (2002). Physical performance and prediction of 2-5A synthetase/RNase L antiviral pathway activity in patients with chronic fatigue syndrome. *In Vivo*, 16(3): 107-110
Snell, C.R., Stevens, S.R., and VanNess, J.M. (2001).Chronic fatigue syndrome, Ampligen, and quality of life: a phenomenological perspective. *Journal of Chronic Fatigue Syndrome*, 8(3/4): 117-121
VanNess, J.M., Snell, C.R., Fredrickson, D.M., Strayer, D.R., and Stevens, S.R. (2001). Assessment offunctional impairment by cardiopulmonary exercise testing in patients with chronic fatigue syndrome. *Journal of Chronic Fatigue Syndrome*, 8(3/4):103-109
VanNess, J.M., Snell, C.R., and Stevens, S.R. (2000). A Realistic approach to exercise for CFS patients. *The CFSResearch Review*, 1(4): 4-8
Snell, C.R. and Stevens, S.R. (1998).Opening the envelope. *The CFIDS Chronicle*, 11(2): 12-13
Snell, C.R. (1997). Physical Education, Swan or Ugly Duckling? *CAHPERD Journal/Times*, 54(4): 25
Snell, C.R. (1993). *The role of physical experience in education*. Eugene, OR: Microform Publications.
Snell, C.R. (1991). Adversity's sweet milk (a personal philosophy of physical education). In R.D. Peavy (Ed.). *Dr. G. Arthur Broten Young Scholars Program*. Western College Physical Education Society Monograph Series.
Snell, C.R. (1990). *Children's cognitions and moral judgment about the use of steroids in sport*.

Eugene, OR: Microform Publications.

Abstracts

Davenport, T.E., Stevens, S. R., Baroni, K., Van Ness, J., Snell, C. (2011). Diagnostic accuracy of symptoms characterizing chronic fatigue syndrome. *Journal of Orthopaedic and Sports Physical Therapy* (1st ed., vol. 41, pp. A92).

Davenport, T.E., Stevens, S. R., Baroni, K., Van Ness, J., Snell, C. (2011). Validity of self report measures for health perceptions in individuals with chronic fatigue syndrome. *Journal of Orthopaedic and Sports Physical Therapy* (1st ed., vol. 41, pp. A34).

VanNess, JM, CR Snell, SR Stevens and TL Stiles. Metabolic and neurocognitive responses to an exercise challenge in CFS. *Med. Sci. Sports. Exerc.* 39(5), 2007.

CR Snell, SR Stevens, TL Stiles and J.M VanNess. Post-exertional symptomology in Chronic Fatigue Syndrome. *Med. Sci. Sports. Exerc.* 39(5), 2007.

VanNess, J.M., C.R. Snell, S.R. Stevens, L. Bateman, B.A. Keller. Using serial cardiopulmonary exercise tests to support a diagnosis of Chronic Fatigue Syndrome. Med. Sci. Sports. Exerc. 38(5) 2006.

Snell, C.R., JM VanNess, S.R. Stevens, L. Bateman Intravenous saline administration improves physical functioning in a patient with Chronic Fatigue Syndrome. Med. Sci. Sports. Exerc. 38(5), 2006

Snell, C.R., J. M. VanNess, D.R. Strayer, and S.R. Stevens. Exercise capacity and immune function in male and female Chronic Fatigue Syndrome Patients. *Med. Sci. Sports. Exerc.* 36(5),2004.

Snell, C.R., VanNess, J.M., Stevens, S.R., Dempsey, W.L. (2003). The phenomenology of post-exertional malaise. *American Association for Chronic Fatigue Syndrome.*

VanNess, J.M., Snell, C.R., Strayer, D.R., Stevens, and Dempsey, W.L. (2003). Gender, exercise capacity, and chronic fatigue syndrome. *American Association for Chronic Fatigue Syndrome.*

Snell, C.R., VanNess, J.M., Stevens, S.R., Dempsey, W.L., and Strayer, D.R. (2002). Using American Medical Association guidelines for classification of disability in chronic fatigue syndrome. *Medicine & Science in Sports & Exercise, 33* (5) Supp. S74.

Snell, C.R., VanNess, J.M., Stevens, S.R., Eberhart, M.M., Fredrickson, D.M., Benson, J., Strayer,D.R., and Carter, W.A. (2001). Comparison of maximal oxygen consumption and RNase L enzyme in patients with chronic fatigue syndrome. *American Association for Chronic Fatigue Syndrome*, AN: 026: 38.

Snell, C.R., Stevens, S.R., and VanNess, J.M. (2001). Chronic fatigue syndrome, Ampligen, and quality of life: a phenomenological perspective. *American Association for Chronic Fatigue Syndrome*, AN: 027: 39.

VanNess, J.M., Snell, C.R., Stevens, S.R., Fredrickson, D.M., Ellazar, R., and Strayer, D.R. (2001). Assessment of functional impairment by cardiopulmonary exercise testing in patients with chronic fatigue syndrome. *American Association for Chronic Fatigue Syndrome*, AN: 24: 37.

Snell, C.R., J.M. VanNess, D.M. Fredrickson, D.R. Strayer, K. Treutler, E. LaRosa, and S.R. Stevens. (2000). Variability of repeated exercise testing in patients with chronic fatigue syndrome. *FASEB J. 14* (4): LB40.

VanNess, J.M., C.R. Snell, D.M. Fredrickson, D.R. Strayer, E. LaRosa, K. Treutler, and S.R. Stevens. (2000). Exercise testing in patients with chronic fatigue syndrome (CFS)--Diagnostic tool? *FASEB J. 14* (4): LB41.

Snell, C.R. (1992). How young children perceive and judge the use of steroids in sport. *Convention abstracts*. SWD AAHPERD/AzAHPERD Annual Convention.

Presentations at Conferences and Professional Meetings

Oral Presentations

International Association for CFS/ME, Ottawa, Ontario, Canada. Exercise Intolerance: Guide to Management and Treatment with S. R. Stevens, J. M. VanNess, B. D. Moore, September, 2011.

International Association for CFS/ME, Ottawa, Ontario, Canada. The Importance of Exercise Challenge, September, 2011.

National Institutes of Health state of the Knowledge Workshop Myalgic Encephalomyelitis/Chronic Fatigue Syndrome Research, Bethesda, MD. "Exercise Testing and the Assessment of Fatigue in CFS/ME." April, 2011.

American Physical Therapy Association, Combined Sections Meeting, New Orleans, LA. "How to Help People Who Are Sick and Tired of Being Sick and Tired: Physical Therapist Management of Chronic Fatigue Syndrome." Davenport, T.E., Stevens, S. R., Van Ness, J., Snell, C., February, 2011.

International Association for CFS/ME, Reno, NV. "Immunological biomarkers fail to discriminate between CFS and control subjects", with SR Stevens, H. Singh, D. Peterson, L. Bateman and J.M. VanNess, March, 2009.

International Association for CFS/ME, Reno, NV. "Assessment issues from biological to behavioral", with J.M. VanNess, SR Stevens, K.T. Kumasake, H. Singh, B. Keller, D. Peterson, L. and J. Montoya, March, 2009.

International Association for CFS, Ft. Lauderdale, FL. "Using a reaction time paradigm to assess neurocognitive function in CFS", with S.R. Stevens, L. Bateman, TL Stiles and JM VanNess. January, 2007.

American Association for Chronic Fatigue Syndrome, Madison, WI. "Chronic Fatigue Syndrome Conditioning: Practical Advise", with S.R. Stevens, 2004.

American Association for Chronic Fatigue Syndrome, Madison, WI. "Strength and Conditioning with Chronic Fatigue Syndrome", with S.R. Stevens, 2004.

Seventh Annual Principal Investigator's Meeting Hemispherx Biopharma, Inc., Hawk's Cay, FL. "RNase-L activity and physical performance in patients with chronic fatigue syndrome", 2001.

American Association for Chronic Fatigue Syndrome, Seattle, WA. "Comparison of maximal oxygen consumption and RNase-L enzyme in patients with chronic fatigue syndrome", with J.M. VanNess, S.R. Stevens, M.M. Eberhart, D.M. Fredrickson, J. Benson, D.R. Strayer, and W.A. Carter, 2001.

Confluences: Converging Concerns a Community of Scholars, Newport, Oregon, "Limits for Performance Enhancement for Human Achievement?" with Martin Gipson, 1997.

California Association for Health, Physical Education, Recreation and Dance Annual Conference, Los Angeles, CA, "Measuring Success in Physical Education: Research Tools for Teachers", 1997.

Southwest District AAHPERD Annual Conference, Alburquerque, NM. "Chronic Fatigue Syndrome (CFS), Physical Activity, and Quality of Life", with Staci Stevens, 1997.

California Association for Health, Physical Education, Recreation and Dance 62nd Annual State Conference, Santa Clara, CA. "The Coach as Conductor: A Reflection on Knowledge for Coaching", 1995.

Twenty-Fourth National Conference on Physical Activity for the Exceptional Individual, San Jose, CA. "Urban Orienteering for Severly Handicapped Secondary and Young AdultTransition Students", with J. Boelter, T. Sueyasu, and J. Brown, 1995.

California Association for Health, Physical Education, Recreation and Dance 62nd Annual State Conference, Santa Clara, CA. "The Coach as Conductor: A Reflection on Knowledge for Coaching@, 1995.

Southwest District AAHPERD 60th Annual Convention, Salt Lake City, UT. "The Role of Physical Experience in Education", 1994.

Southwest District AAHPERD 58th Annual Convention, Phoenix, AZ. "How Young Children Perceive and Judge the Use of Steroids in Sport", 1992.
Sport Literature Association Annual Conference, Florence, OR, "Sport Literature: Medium and Message", 1990.
National Association for Physical Education in Higher Education Annual Conference, San Diego, CA, "Scholarship in the Twenty First Century: Implications for Teaching and Learning the Body Of Knowledge", 1990.
National Intramural-Recreational Sports Association Washington/Oregon Workshop, Seattle, WA. "Recreation and Intramurals: Broadening the Concept", with J. Dow, D. Eller, and L. Tanselli, 1989.
British Association of Sport Sciences Annual Junior Conference, Staffordshire, England, "The Expressed Fears of Young Children in a Competitive Situation", 1987.

Poster Presentations

American Physical Therapy Association, Combined Sections Meeting, New Orleans, LA. "Diagnostic accuracy of symptoms characterizing chronic fatigue syndrome". Davenport, TE, Stevens, SR, Baroni, K, Van Ness, J, Snell, CR. February, 2011.
American Physical Therapy Association, Combined Sections Meeting, New Orleans, LA. Reliability and validity of Short Form 36 Version 2 to measure health perceptions In subgroups of individuals With fatigue". Davenport, TE, Stevens, SR, Baroni, K, Van Ness, JM, Snell, CR. February, 2011.
International Association for CFS, Ft. Lauderdale, FL. "Metabolic and immune responses to exercise testing". J.M. VanNess, C.R. Snell, S.R. Stevens, L. Bateman and TL Stiles. January,2007
International Association for CFS, Ft. Lauderdale, FL. "Post-exertional malaise following an exercise challenge". S.R. Stevens, C.R. Snell, L. Bateman, T.L. Stiles and J.M. VanNess. January, 2007
International Association for CFS, Ft. Lauderdale, FL. "Intravenous saline administration improves physical functioning". T.L. Stiles, S.R. Stevens, C.R. Snell, L. Bateman, and J.M. VanNess. Ft. Lauderdale FL, January, 2007
International Association for CFS, Ft. Lauderdale, FL. "Chronic fatigue syndrome and the abnormal exercise stress test". M.E. Ciccolella, C.R. Snell, S.R. Stevens, T.L. Stiles, J.M. VanNess. January, 2007
Pacific Undergraduate Research Conference, Stockton, CA. "Intravenous saline improves physical capacity and improves extracellular water mass in a patient with Chronic Fatigue Syndrome". D. Pratt, T. Stiles, C. Jensen, S. R. Stevens, J.M. VanNess, and C.R. Snell. May 6, 2006
American Association for Chronic Fatigue Syndrome, Madison, WI, "Impaired metabolism 24-hours post exercise in chronic fatigue syndrome". J.M. VanNess, C.R. Snell, S.R. Stevens, R. Gibbons-Radin, and B. Keller. October, 2004.
American College of Sports Medicine 51st Annual Meeting, Indianapolis, IN. "Exercise capacity and immune function in male and female chronic fatigue syndrome patients". C.R. Snell, J.M.VanNess, D.R. Strayer, and S.R. Stevens. June 3-7, 2004.
American Association for Chronic Fatigue Syndrome, Chantilly, VA, "The phenomenology of post-exertional malaise". C.R. Snell, J.M. VanNess, S.R. Stevens, W.L. Dempsey. January 2003.
American Association for Chronic Fatigue Syndrome, Chantilly, VA. Gender, exercise capacity, and chronic fatigue syndrome. J.M. VanNess, C.R. Snell, D.R. Strayer, S.R. Stevens, and W.L. Dempsey. January 2003.
American College of Sports Medicine 49th Annual Meeting, St. Louis, "Using American Medical Association guidelines for classification of disability in chronic fatigue syndrome". C.R. Snell, J.M. VanNess, S.R. Stevens, W.L. Dempsey, and D.R. Strayer. May 2002.

American Association for Chronic Fatigue Syndrome, Seattle, "Chronic fatigue syndrome, Ampligen, and quality of life: a phenomenological perspective". C.R. Snell, S.R. Stevens, and J.M. VanNess, January, 2001.

American Association for Chronic Fatigue Syndrome, Seattle, "Can cardiopulmonary exercise testing serve as a diagnostic tool in chronic fatigue syndrome? Results from a multi-center phase-III clinical trial", J.M. VanNess, C.R. Snell, S.R. Stevens, D.M. Fredrickson, R. Ellazar, and D.R. Strayer, January, 2001.

Experimental Biology 2000 San Diego, CA, "Variability of repeated exercise testing in patients with CFS". C.R. Snell, C.R., J.M. VanNess, J.M., D.M. Fredrickson, D.R. Strayer, K. Treutler, E. LaRosa, E, and S.R. Stevens, April, 2000.

Experimental Biology 2000, San Diego, Exercise testing in patients with CFS—diagnostic tool?" C.R. Snell, C.R., J.M. VanNess, J.M., D.M. Fredrickson, D.R. Strayer, K. Treutler, E. LaRosa, E, and S.R. Stevens, April, 2000.

Invited Presentations

The CFIDS Association of America, Inc. Education and Empowerment Seminar Series, Houston, TX. "Unraveling the Mystery of Post-Exertional Malaise", June, 2007.

Universidad Politechnica de Aguascalientes, Mexico. "Deporte: Politica, Salud, Economica, y Valores", February, 2007.

University of the Pacific Learning Assessment Workshop. "Oral Summations as an Assessment Technique", 1998.

Grant Proposals

UOP Substance Abuse Curriculum Infusion Project, 1997. Awarded: $500

Nevada chronic fatigue syndrome support group "think-tank". Dissemination and publication of CFS research. Proposal submitted November, 2000. Requested: $14,875. Not funded.

Nevada chronic fatigue syndrome support group "think-tank". Therapeutic exercise for the treatment of CFS. Proposal submitted January, 2001. Requested: $14,875. Not funded.

National Institute for Disease and Disability Rehabilitation. Rehabilitation and disability assessment strategies in chronic fatigue and immune system dysfunction syndrome. Proposal submitted October, 2000. Requested: $445,500. Not funded. Resubmitted October, 2001. Requested: $450,000

CFIDS Association of America. Interactions between various bodily systems and CFIDS symptomology. Proposal submitted November, 2001. Requested: $77,119. Not funded.

American fibromyalgia Syndrome Associayion, Inc. Interactions between various bodily symptoms and FMS/CFS symptomology. Proposal Submitted August 2002. Requested $46,910. Not funded.

CFIDS Association of America. Cardiovascular, immune, sympathetic and neurologic function in CFIDS. Proposal submitted October 2002. Requested $79,875. Not funded.

CFIDS Association of America. Using an Exercise Challenge to Investigate the Pathophysiology of
CFIDS. April, 2004, $80,000. Funded

CFIDS Association of America. Post-Exertional Pathophysiology in CFIDS. April 2006, $65,000. Funded

Invited Participation at Conferences and Symposia

National Institutes of Health state of the Knowledge Workshop Myalgic Encephalomyelitis/Chronic Fatigue Syndrome Research, Bethesda, ML. April, 2011.

California Department of Education Health and Physical Education Leadership Conference. Asilomar, CA, 1994.

Project Teach New Horizons for Health Education in California. Dublin, CA, 1994.

Project Teach New Horizons for Health Education in California. Sacramento, CA, 1999.
Asheville Institute on General Education, Asheville. NC, 1999.
Associated New American Colleges/Woodrow Wilson Summer Institute "Renewing the Faculty-Institutional Partnership in Faculty Work", Ithaca College, June 14-17, 2000
Chronic Fatigue Syndrome Assessment Symposium: Immunologic Aspects of Chronic Fatigue Syndrome. Bethesda, MD, 2001.

Chair, Theses and Dissertations
The contribution of body segments to ball velocity in the overarm throw of skilled male and female athletes. Louisa Summers. Master of Arts, 1995.
The impact of a mandatory wellness program in a fire protection district. Staci R. Stevens. Master of Arts, 1997.

Professional Service
Chronic Fatigue Syndrome Advisory Committee (Chair), U.S. Department of Health and Social Security, 2007 to date. Chair, 2010 to2012.
San Joaquin County Chronic Disease and Obesity Prevention Task Force, Steering Committee, 2009 to date
American Association for Health Education, School Health Education Advocate for University of the Pacific, 1997 to date.
California Association for Health, Physical Education, Recreation and Dance, Research Section Chair, 1996-1997.
Member of the Regional Instructional Leadership Team responsible for implementation of the California Health Framework and Physical Education Framework, 1993-1994

Professional Associations
American College of Sports Medicine
The CFIDS Association of America, Inc.
International Association for Chronic Fatigue Syndrome.

Consultancies
Kendall/Hunt Publishing Company.
Holcomb Hathaway, Publishers
Galt Joint Union School District.
Workwell Foundation.

EXHIBIT B

UNIVERSITY OF THE
PACIFIC
College of the Pacific

Cardiopulmonary Exercise Test (CPET) Evaluation Report

Name: Mark Rowell
Date: February 15, 2012
CPET Dates: January 30, 2012; Test 1
January 31, 2012; Test 2

Department of
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Findings:

Mr. Rowell demonstrates poor functional capacity and a substantial reduction in work capacity in the post-exertional state. This high day to day variability will severely limit his ability to engage in normal activities of daily living and preclude him from full-time work of even a sedentary/stationary nature.

Indications:

The patient was referred to our lab for global functional evaluation examining metabolic, cardiovascular, pulmonary and cognitive function after experiencing physical stress. Mr. Rowell underwent a cardiopulmonary exercise test-retest over a two-day period. He is 39 years-old, 71.5 inches tall and weighs 180 pounds.

Diagnosis:

Chronic fatigue syndrome

Procedure:

The patient performed symptom limited 15 W/min ramping protocols on a bicycle ergometer while expired gases were collected for determination of oxygen consumption, carbon dioxide production and pulmonary ventilation. Two exercise tests were performed on consecutive days. The heart rate, blood pressure and arterial oxygen saturation were assessed throughout the tests. Pulmonary function testing was performed before the exercise tests to establish baseline resting values. A reaction time test was administered after the second exercise test. Appropriate measures were taken to calibrate and test the accuracy and reliability of the testing equipment on both days. These tests were performed to determine functional capacity and assess the recovery response to a standardized physical stressor.

In the fields of exercise science and medicine, cardiopulmonary exercise testing (CPET) is considered the gold standard for measuring and evaluating functional capacity and fatigue. Position statements and/or guidelines for the performance of this testing are available from the American College of Sports Medicine, American Heart Association, American College of Chest Physicians, American Thoracic Society and the American Medical Association, among others. All endorse this method of testing and acknowledge peak oxygen consumption, only available with CPET, as the most accurate measurement of functional capacity. The Pacific Fatigue Laboratory has adopted this standardized, reliable and accurate tool to evaluate disability in fatigue-related disorders.

Conclusions:

1) Assessment of Effort: **Normal**
   The patient was cooperative and gave very good effort during both exercise tests. There is no evidence of malingering. Cardiopulmonary exercise testing provides objective measures that can clearly distinguish between indolence and true disability. See page 4, #1 Assessment of Effort.

2) Reproducibility: **Abnormal**
   Exercise test-retest reproducibility is a cornerstone tenet of exercise physiology. It possesses both validity and reliability. Day to day test variability is less than 8% for healthy individuals as well as those with cardiac, pulmonary and metabolic disease. Abnormally high variability was seen for ventilation at peak exercise, and oxygen consumption, workload and ventilation at the ventilatory/anaerobic threshold. See page 4, #2 Reproducibility.

3) Metabolic Responses: **Abnormal**
   Oxygen consumption values at the ventilatory/anaerobic threshold (30-33% of predicted values) were abnormally low for both tests. Mr. Rowell meets New York Heart Association criteria for moderate to severe functional impairment for Test 2. This represents a metabolic abnormality that provides a limitation for sustaining work. See page 4, #3 Metabolic Responses and page 9, Graph 1.

4) Workload: **Abnormal**
   There was high variability in workload at the ventilatory/anaerobic threshold with a drop of 30% Test 1 to Test 2. This is an indication of reduced efficiency at low levels of work in the post-exertional state and provides a limitation for sustaining work. See page 5, #4 Work in Watts and page 9, Graph 2.

5) Cardiovascular Responses: **Normal**
   The patient demonstrated a normal resting and exercise ECG response with no arrhythmia or ischemia noted. See page 5, #5 Cardiovascular Responses and page 10, Graph 3.

6) Pulmonary Function: **Abnormal**
   Pre-exercise pulmonary function testing was within normal limits. However there was high variability between tests at peak exercise (19% drop) and at the ventilatory/anaerobic threshold (18% drop). This indicates a lack of homeostasis in ventilatory drive. Inadequate ventilatory drive during exercise can result from respiratory muscle fatigue or a breakdown in central respiratory control and may produce an acidotic state contributing to prolonged recovery and muscle soreness. This represents a pulmonary abnormality that provides a limitation for sustaining work. See page 5, #6 Lung Function and page 10, Graph 4.

7) Cognitive Function: **Normal**
   The cognitive functions assessed here are best described as timed psychomotor skills requiring focused or sustained attention. The measures used are different from standard neuropsychological tasks. The first simple and choice reaction time tasks are regarded as practice trials. The subsequent sequential reaction time tasks are more complex and test divided attention and memory. See page 5, #7 Cognitive Function.

8) Recovery Response: **Abnormal**

A recovery time of 24 hours or less and minor muscle soreness is considered normal following exercise testing. This patient's recovery time of more than 7 days along with excessive fatigue, pain and symptom exacerbation should be considered an extreme reaction to physical activity. See page 6, #8 Recovery Response.

Results:

1. Assessment of Effort

The American Heart Association cite peak respiratory exchange ratio (RER) as the most accurate and reliable gauge of subject effort. A peak RER of ≥1.10 is generally considered an indication of excellent patient effort during cardiopulmonary exercise testing.

Test Criteria	Test 1	Test 2	Criteria Met T1/T2
RER ≥ 1.10	☑	☑	☑/☑
RPE ≥ 17	☑	☑	☑/☑
Plateau in VO2	☐	☐	☐/☐

2. Reproducibility

Peak Values	Test 1	Test 2	% Change	Reproducible
VO_2	27.9	27.4	↓2	Yes
HR (bpm)	173	168	↓3	Yes
V_E (l/min)	74.7	60.3	↓19	No
Workload (W)	204	188	↓<8	Yes
SBP (mmHg)	188	190	↑1	Yes

V/AT Values	Test 1	Test 2	% Change	Reproducible
VO_2	11.8	10.8	↓8	No
HR (bpm)	104	101	↓3	Yes
V_E (l/min)	21.3	17.5	↓18	No
Workload (W)	73	51	↓30	No
SBP (mmHg)	152	134	↓12	No

3. Metabolic Responses

Peak Values	Oxygen Consumption (mL/min)	Oxygen Consumption (mL/kg/min)	Percent Predicted (%)
Test 1	2277	27.9	77
Test 2	2239	27.4	76

V/AT Values	Oxygen Consumption (mL/min)	Oxygen Consumption (mL/kg/min)	Percent Predicted (%)
Test 1	967	11.8	33
Test 2	882	10.8	30

4. Work in Watts

Workload	V/AT (W)	Peak (W)	Percent Predicted (%)
Test 1	73	204	88
Test 2	51	188	81

5. Cardiovascular Responses

Heart Rate	Resting Seated (bpm)	V/AT (bpm)	Peak (bpm)	Percent Predicted (%)
Test 1	76	104	173	96
Test 2	78	101	168	93

Blood Pressure	Resting Supine (mmHg)	Resting Seated (mmHg)	Peak (mmHg)
Test 1	132/86	130/88	188/90
Test 2	132/90	124/82	190/90

6. Lung Function

Resting pulmonary function results and pulmonary ventilation data during exercise are shown on the Summary Page.

Ventilation	Maximum Voluntary (L/min)	Respiratory Rate (br/min)	Peak (L/min)	Ventilatory Reserve (%)
Test 1	191	30	74.7	39
Test 2	204	28	60.3	30

Normal Ventilatory Reserve = (Peak VE/MVV)*100≤85%

7. Cognitive Function

The California Computerized Assessment Package (CalCAP®) was performed to determine simple reaction time with the dominant hand (SRT BASE), choice reaction time (CRT BASE), sequential reaction time with repetition of numbers (CRT SEQ1) and sequential reaction time with numbers in sequence (CRT SEQ2); the following data were obtained:

Test	Post-Test 2	Reaction Time %ile
SRT BASE	252	85
CRT BASE	454	17
CRT SEQ1	662	13
CRT SEQ2	601	60

8. Recovery Response

A post exercise test log was maintained by the patient. Following test 1 the patient reported feeling chest pain, headache and a burning sensation in his legs. The next day these symptoms persisted with the addition of nasal congestion and whole-body soreness. Following test 2 the patient reported feeling physically and mentally drained with headache and body pain. Recovery was not complete 7 days post-testing.

Summary:

There was abnormally high variability between tests indicating a "fatigue effect" which manifested itself in a disruption of homeostasis particularly at the ventilatory/anaerobic threshold level of work. This diminished physical working capacity is accompanied by metabolic, pulmonary and recovery anomalies. The high variability between tests and observed physiological abnormalities are inconsistent with deconditioning or poor effort.

The ventilatory/anaerobic threshold is an important index of the amount of work that can be sustained. Work intensities above the ventilatory/anaerobic threshold require energy production derived from anaerobic sources limiting the duration at which such intensities of effort can be maintained, causing cumulative fatigue and extending recovery time. Most activities of daily living (reading, walking at a normal pace, computer use, office-type work, etc.) are aerobic in nature and healthy individuals are able to perform such activities for prolonged periods of time with no meaningful physical fatigue. If the ventilatory/anaerobic threshold occurs at low oxygen consumption, normal daily activities may exceed the energy demands that can be met through oxidative metabolism, thus requiring anaerobic metabolism to provide energy. This results in early onset fatigue and prolonged recovery.

The patient's reduced work efficiency and Test 2 early onset ventilatory/anaerobic threshold of 10.8 $ml \cdot kg^{-1} min^{-1}$ of oxygen use indicate moderate to severe functional impairment. Many normal activities of daily living would severely tax Mr. Rowell's capacity to produce energy aerobically. Oxygen demands for tasks such as driving a car, showering or climbing stairs fall in the range of 10.5 to14 $ml \cdot kg^{-1} min^{-1}$. Performing such tasks may exceed his ventilatory/anaerobic threshold which is likely to precipitate the onset/exacerbation of symptoms, including excessive fatigue. Mr. Rowell's high variability in work efficiency, metabolic, and pulmonary function and the extensive fatigue and symptom exacerbation experienced following testing indicate an inability to consistently and reliably function in a structured work environment. This is both an objective measure of fatigue and a quantifiable limitation of the patient's ability to function.

Signature Page:

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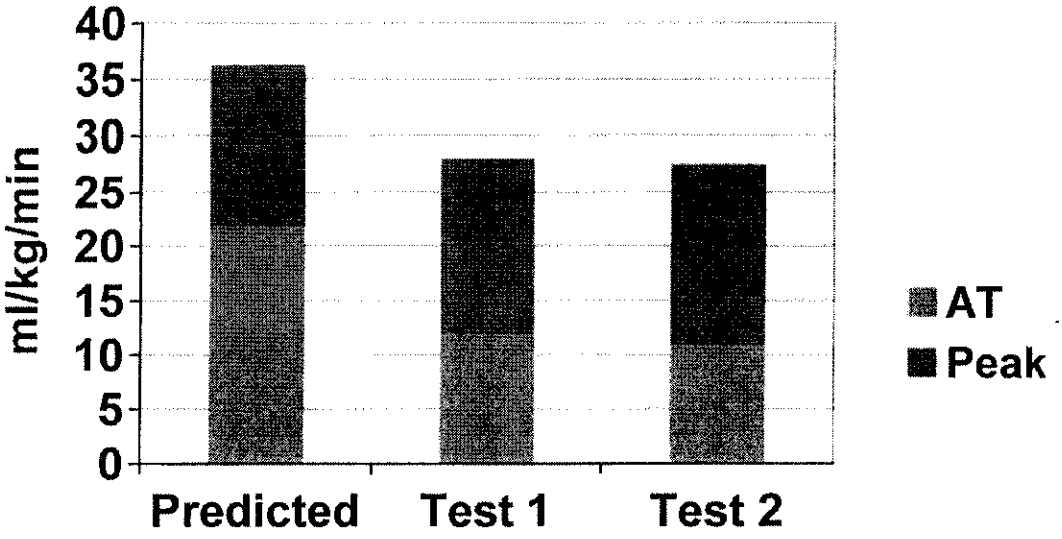
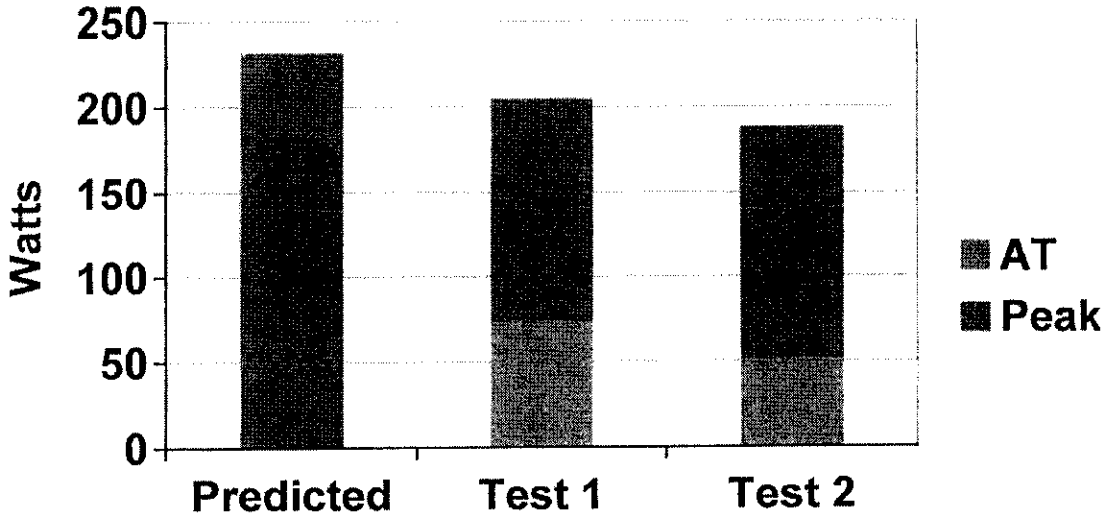
Graph 1: Oxygen Consumption

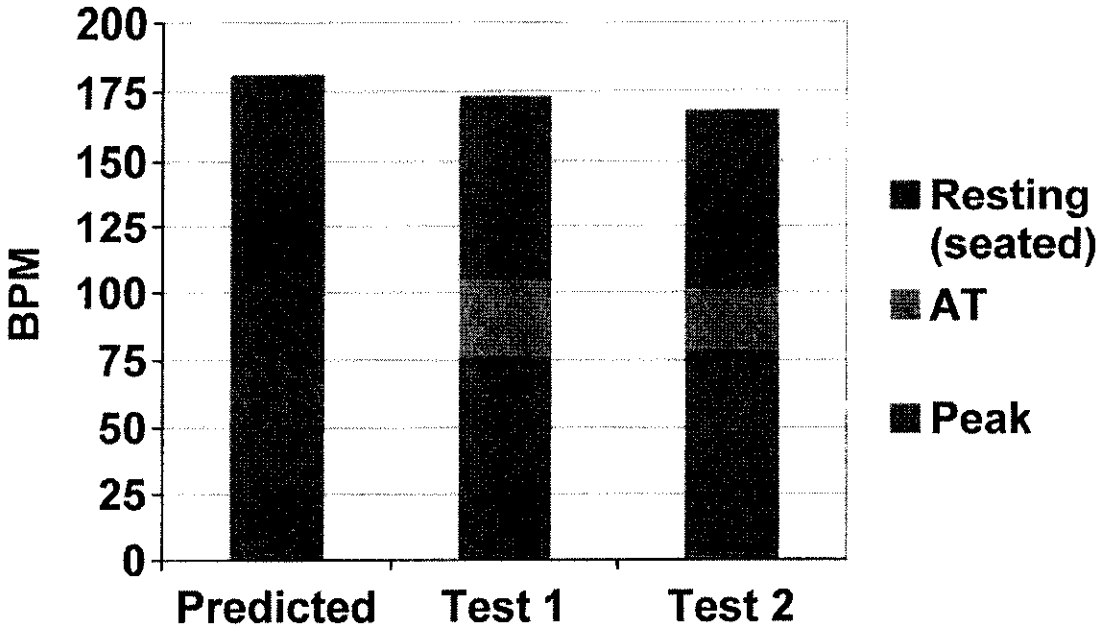


***The predicted AT for oxygen consumption is the center section of the column, which is a window of 40% to 60% of the the predicted peak value.**

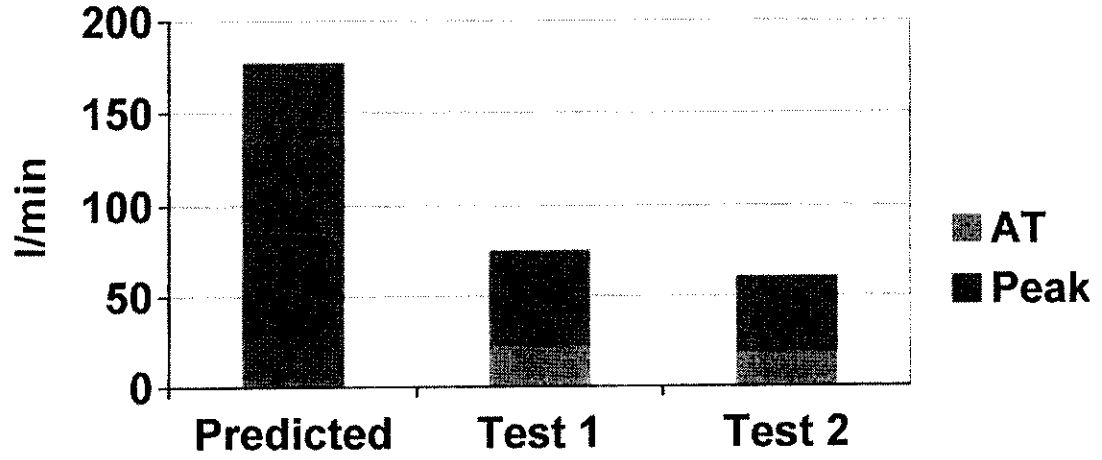
Graph 2: Workload



Graph 3: Heart Rate



Graph 4: Ventilation



Mark Rowell
Test/Retest Summary

TEST 1

Pulmonary Function Testing

	Best	Pred	% Pred
FVC	5.61	5.57	100
FEV1	4.66	4.43	105
MVV	191	172	111

Resting Temperature

98.0°F

Cycle Ergometer Test

	Time (min)	VE	VO2 (ml/kg/min)	RER	HR	Load (watts)	BP	RPE
Supine	*Rest*				63		132/86	
Seated	2	9.2	3.7	0.86	76	0	130/88	7
	Test							
	1	14.3	7.4	0.77	97	0	144/86	7
	3	15.0	7.8	0.81	92	29	146/86	7
	5	18.3	9.1	0.86	99	58	146/82	8
	7	28.5	13.5	1.05	114	89	164/84	9
	9	35.5	15.3	1.16	132	118	170/90	13
	11	44.2	19.4	1.12	147	148	188/90	15
	13	56.2	23.1	1.16	164	179	188/90	17
	Peak	74.7	27.9	1.22	173	204	188/90	18
	Recovery							
	1	53.8	17.0	1.46	156	0	160/78	
	2	36.3	10.0	1.47	146	0	158/78	

Total Test Time: 14:47
VO2 max: 27.9
Max watts: 204
AT: 73 watts 5:57
HR @ AT: 104
VO2 @ AT: 11.8

TEST 2

Pulmonary Function Testing

	Best	Pred	% Pred
FVC	5.72	5.57	102
FEV1	4.76	4.43	107
MVV	204	172	118

Resting Temperature

98.4°F

Cycle Ergometer Test

	Time (min)	VE	VO2 (ml/kg/min)	RER	HR	Load (watts)	BP	RPE
Supine	*Rest*				70		132/90	
Seated	2	6.2	2.4	0.83	78	0	124/82	7
	Test							
	1	14.5	7.2	0.81	97	0	132/84	7
	3	13.2	7.8	0.78	93	27	138/80	8
	5	22.5	12.1	0.86	103	57	134/80	9
	7	30.7	13.7	1.03	115	88	164/84	11
	9	27.0	15.5	0.97	133	118	182/90	15
	11	44.8	21.6	1.10	149	148	188/92	17
	13	58.9	27.4	1.11	166	178	186/92	20
	Peak	60.3	27.4	1.13	168	188	190/90	20
	Recovery							
	1	27.8	9.3	1.52	143	0	170/80	
	2	27.1	8.7	1.38	137	0	170/80	

Total Test Time: 13:36
VO2 max: 27.4
Max watts: 188
AT: 51 watts 4:32
HR @ AT: 101
VO2 @ AT: 10.8

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